UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,805	04/08/2004	Henrik Stender	58418-CIP (48497)	9064

21874 7590 05/18/2007
EDWARDS ANGELL PALMER & DODGE LLP
P.O. BOX 55874
BOSTON, MA 02205

EXAMINER	
JOHANNSEN, DIANA B	
ART UNIT	PAPER NUMBER
1634	

MAIL DATE	DELIVERY MODE
05/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/821,805	STENDER, HENRIK	
	Examiner	Art Unit	
	Diana B. Johannsen	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 February 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) *13-24* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12 and 25-31* is/are rejected.

7)☒ Claim(s) *8,11,12 and 29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1104*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I, claims 1-11, 12 in part, and 25-31, in the reply filed on February 14, 2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Claims 13-24, and claim 12 to the extent that the claim is drawn to the Invention of non-elected Group II, are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on February 14, 2007.

Priority

3. With regard to applicant's cross reference to related applications on page 1 of the specification, it is noted that the specification should be amended so as to provide the current status of application 10/719,979 (abandoned). Further, applicant's statement that the '979 application is "a continuation of" the provisional application is improper, as an application cannot be a continuation of a provisional application. Thus, the specification should be amended to state, e.g., that the application "claims the benefit of" the provisional application.

Information Disclosure Statement

4. The information disclosure statement filed November 18, 2004 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. Particularly, copies of the following references were not provided and therefore those references have not been considered: document CH (Oliveira et al); the second document listed under CI (Stender et al). Further, an incomplete citation was provided for the Palleroni reference; accordingly, that reference has not been considered.

Claim Objections

5. Claims 8, 11-12 and 29 are objected to because of the following informalities. Claims 8 and 11-12 refer back to the "probe of claims ___" rather than the "probe of claim ___." Claim 29 recites "apdapted" instead of "adapted." Appropriate correction is required.

Claim Rejections - 35 USC § 112, second paragraph

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-12 and 25-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-12 and 25-31 are indefinite over the recitation of the limitation "suitable for the detection, identification and/or quantitation of Pseudomonas (sensu stricto)" in

claim 1. The specification does not provide a definition for this language, and it is not clear what is encompassed by it. For example, how would one of skill differentiate a sequence that is "suitable" (and therefore encompassed by the claim) from one that is not suitable? As it is unclear what is meant and encompassed by this language, the metes and bounds of the claims are not clear.

Claims 1-12 and 25-31 are indefinite over the recitation of the language "said PNA probe being complementary to a target sequence of 23S rRNA or rDNA of all species of the genus Pseudomonas, or its complement." The specification at page 8 states that "Reference herein to 'all species of the genus Pseudomonas', or a related phrase means essentially all species of that genus described in the 'Approved lists of bacterial names.' Int. J. Syst. Bacteriol. (1980) 30:225-420 with subsequent revisions published in Int. J. Syst. Bacteriol. with the exception of Pseudomonas pertucinogena." Thus, the specification makes clear, via the use of the language "essentially all" (rather than simply "all") species and the exclusion of at least one particular species, that the language "all species of the genus Pseudomonas" does not in fact include all species of the genus Pseudomonas, such that the language of the claims has a meaning contrary to its ordinary meaning. Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). In the instant case, the language "all

species of the genus Pseudomonas" is indefinite because the specification does not clearly redefine the language. In particular, applicant is apparently relying on information published in various revisions of Int. J. Syst. Bacterio., such that the species encompassed by the claims (while never actually named) clearly are not fixed and definite. Further, applicant has not provided the identities of those species encompassed by this language, as would be necessary to apprise one of skill in the art as to what is encompassed by the claims as written. (It is also noted that the specification does not attempt to incorporate by reference, e.g., the reference or revisions mentioned on page 8). Thus, it is unclear what is actually encompassed by the language "all species of the genus Pseudomonas."

With further regard to claims 1-12 and 25-36, it is also noted that it is not clear what the limitation "its complement" in claim 1 refers to (i.e., is "it" the PNA probe, the "nucleobase sequence," the "target sequence," etc.?). Thus, the metes and bounds of this language and of the claims are not clear.

Claim 2 is indefinite over the recitation of the limitation "at least about 90% identical." Particularly, the language "at least" suggests that a molecule must meet the 90% limitation, while the term "about" raises doubt about whether molecules with a lower % identify are encompassed by the claim, and if so, what the actual cut-off for the claim is. It is noted that the instant claims are drawn to particular products, and that a precise description of those products is required in order for one of skill in the art to be apprised of what the claim does and does not encompass.

Claim 3 is indefinite over the recitation of the limitation "the probe sequence" because there is insufficient antecedent basis for this limitation.

Claim 3 is indefinite over the recitation of the limitation "8-17 subunits in length" because it is not clear what would constitute a "subunit" within the context of the claims. Clarification is required.

Claim 6 is indefinite over the recitation of the limitation "the detectable moiety or moieties" because there is insufficient antecedent basis for this limitation.

Claim 12 is indefinite over the recitation "wherein in situ hybridization is used for analysis of Pseudomonas (sensu stricto) optionally present in the sample." First, there is insufficient antecedent basis for the limitation "the sample." Second, as claim 1 is drawn to a particular product, it is unclear how the recitation of claim 12 might be further limiting. Clarification is required.

Claims 26-27 are indefinite because the claims appear to require particular types of method steps, while the claims are drawn to kits. It is not clear how the recitations of the claims limit the products that are claimed.

Claims 28-31 are indefinite because the claims refer to the claimed kits being "adapted" for use in particular methods/assays, but not indicate, e.g., what adaptations are actually made, as would be necessary to apprise one of skill in the art as to what differences in structural and/or functional properties actually exist with respect to the claimed kits as compared to prior art kits. The claims should be amended so as to make clear what features are actually required of the claimed products.

Claim Rejections - 35 USC § 112, first paragraph

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 1-12 and 25-31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a written description rejection.

It is noted that the claims have been evaluated in accordance with the Guidelines for Examination of Patent Applications under the 35 USC 112, first paragraph "Written Description" Requirement (*66 FR 1099* [01/05/2001]) and in accordance with the guidance provided in *MPEP* 2163. The written description requirement for a claimed genus may be satisfied through sufficient description of a representative number of species by (a) actual reduction to practice, (b) reduction to drawings or sufficiently detailed structural chemical formulas, etc., so as to provide a complete description of structure or acts or a process or (c) if both (a) and (b) are lacking, disclosure of relevant, identifying characteristics, i.e., structure or other physical and/or chemical properties, by functional characteristics coupled with a known or disclosed correlation between function and structure, or by a combination of such identifying characteristics, sufficient

to show possession of the genus. A "representative number of species" means that the species which are adequately described are representative of the entire genus.

As noted above, claim 1 includes the limitation "said PNA probe being complementary to a target sequence of 23S rRNA or rDNA of all species of the genus Pseudomonas, or its complement." The specification at page 8 states that "Reference herein to 'all species of the genus Pseudomonas', or a related phrase means essentially all species of that genus described in the 'Approved lists of bacterial names.' Int. J. Syst. Bacteriol. (1980) 30:225-420 with subsequent revisions published in Int. J. Syst. Bacteriol. with the exception of Pseudomonas pertucinogena." Thus, the specification makes clear, via the use of the language "essentially all" (rather than simply "all") species and the exclusion of at least one particular species, that the language "all species of the genus Pseudomonas" does not in fact include all species of the genus Pseudomonas, such that the language of the claims has a meaning contrary to its ordinary meaning. However, a clear description of what is encompassed by the language of the claims is not provided. Specifically, the specification never makes clear what species and/or what 23S rRNA/rDNA sequences are actually encompassed by the claims. It is also noted that the specification does not attempt to incorporate by reference, e.g., the reference or revisions mentioned on page 8.

As Applicant has not actually provided the identities of those species encompassed by this language, or specified, e.g., what 23S rRNA/rDNA sequences correspond to the pseudomonads that are encompassed by the claims, Applicant has not described a representative number of species encompassed by the claims by either

(a)reduction to practice or (b) reduction to drawings or detailed structural formulas so as to provide a complete structural description. In evaluating the claims with regard to (c) description of a representative number of species by a disclosure of relevant identifying characteristics or combinations thereof, it is noted that applicant has disclosed only one particular probe by its sequence/structure, SEQ ID NO: 1. However, none of the instant claims require that particular sequence, and the claims clearly encompass a much broader genus of molecules that could potentially include thousands of different molecules differing structurally from SEQ ID NO: 1. (In particular, it is noted that even claims 2 and 4, which include a recitation of SEQ ID NO: 1, encompass a probe in which only "a portion...is at least about 90% identical" to SEQ ID NO: 1 [claim 2] and a probe comprising any "variations" of SEQ ID NO: 1). Thus, SEQ ID NO: 1 is not representative of the broad genus of the instant claims, and the instant claims fail to comply with the written description requirement.

10. Claims 1-12 and 25-31 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a PNA probe consisting of SEQ ID NO: 1, does not reasonably provide enablement for any probe "complementary to a target sequence of 23S rRNA or rDNA of all species of the genus Pseudomonas," including probes having a "portion" that "is at least about 90% identical" to SEQ ID NO: 1 and probes comprising any "variations" of SEQ ID NO: 1. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

There are many factors to be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any necessary experimentation is "undue." These factors include, but are not limited to: (A) the breadth of the claims; (B) the nature of the invention; (C) the state of the prior art; (D) the level of one of ordinary skill; (E) the level of predictability in the art; (F) the amount of direction provided by the inventor; (G) the existence of working examples; and (H) the quantity of experimentation needed to make or use the invention based on the content of the disclosure. *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988) (MPEP 2164.01(a)).

In the instant case, it is again noted that the claims encompass probes complementary to "a target sequence of 23S rRNA or rDNA of all species of the genus Pseudomonas." The specification at page 8 states that "Reference herein to 'all species of the genus Pseudomonas', or a related phrase means essentially all species of that genus described in the 'Approved lists of bacterial names.' Int. J. Syst. Bacteriol. (1980) 30:225-420 with subsequent revisions published in Int. J. Syst. Bacteriol. with the exception of Pseudomonas pertucinogena." Thus, the specification makes clear, via the use of the language "essentially all" (rather than simply "all") species and the exclusion of at least one particular species, that the language "all species of the genus Pseudomonas" does not in fact include <u>all</u> species of the genus Pseudomonas, such that the language of the claims has a meaning contrary to its ordinary meaning. However, a clear description of what is encompassed by the language of the claims is not provided. Specifically, the specification never makes clear what species and/or

what 23S rRNA/rDNA sequences are actually encompassed by the claims. The specification does disclose and exemplify the use of a single PNA probe having the sequence set forth in SEQ ID NO: 1, such that one of skill in the art could clear make and use this particular probe. However, given the absence of guidance in the specification, the identities of other molecules that might be usable in a manner similar to SEQ ID NO: 1 are not known. With particular regard to claims 2 and 4, it is further noted that the claims are not limited in any way with regard to functional properties (for example, the claims are not limited to, e.g., probes that specifically bind to 23S sequences of a particular group of pseudomonads), and further that it is unknown and unpredictable whether the multitude of variants of SEQ ID NO: 1 encompassed by these claims would actually function as SEQ ID NO: 1 itself does. Absent guidance from the specification, one of skill in the art may look to the teachings of the prior art for further enabling guidance with regard to a claimed invention. However, in the instant case, it is applicant alone who is in possession of the information necessary to make the invention of the claims; specifically, the knowledge of what species of Pseudomonas and/or what particular 23S sequences function in applicant's invention. The definition of "all species of the genus Pseudomonas" employed by applicant is unique to applicant; thus, the prior art cannot provide any teachings that would overcome the deficiencies addressed herein. Further, no quantity or type of experimentation could be performed that would provide one with the identities of the species encompassed by the claims. Thus, while one of skill in the art could clear make a PNA probe consisting of the nucleotide

sequence set forth in SEQ ID NO: 1, it would require undue experimentation to make applicant's invention in a manner reasonably commensurate with the instant claims.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1-12 and 25-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Lexow (WO 00/39333 [7/2000]).

It is first noted that while the claims lack written description and enablement for the reasons set forth above, and it is not clear what molecules are encompassed by the claims, the text of claim 3 recites the limitation "wherein the probe sequence is 8-17 subunits in length," suggesting that, e.g., 8mers of the disclosed preferred sequence SEQ ID NO: 1 are encompassed by the claims. Thus, this rejection applies to the claims to the extent that they encompass such molecules.

Lexow disclose all 65,536 possible PNA octamers (see entire reference, particularly Example 15, as well as pages 3, 17, 35, 40, and 80). Such molecules meet the requirements of claims 1 and 3, as evidenced by the recitation in claim 3 of a probe with a sequence that "is 8-17 subunits in length." Regarding claim 2, multiple octamers within the set of Lexow include "at least a portion" that is at "at least about 90% identical" to SEQ ID NO: 1. Regarding claim 4, multiple octamers within the set of Lexow constitutes types of "variations" of SEQ ID NO: 1. With respect to claims 5-11,

Lexow disclose that their PNA octamers may be labeled fluorescently or with "other appropriate labels," such that Lexow disclose both labeled and unlabeled octamers (see entire reference, particular Example 15). With further regard to claims 7-8, it is noted that fluorescence labeled beads and spheres may be used in such a way that they are self-reporting and function as a "linear beacon." It is noted that the instant claims are drawn to products and therefore are not limited to any particular method of use; further, neither the specification nor the prior art provide a limiting definition of the term "PNA linear beacon." Regarding claims 10-11, Lexow disclose the binding of all possible octamers to a support; further, the "signal chain" of Lexow constitutes a type of linker (see Example 15). Regarding claim 12, it is noted that the claim is not further limiting with regard to the product of the claims. Regarding claims 25-31, Lexow disclose kits for performing their methods, which kits may include their adaptors, which adaptors are optionally attached to solid support(s), as well other reagents such as enzymes, vectors, primers, buffers, solutions, labeling means, etc. (see, e.g., page 57). Such kits may be employed in any of the assays mentioned in the present claims, and the kits of Lexow therefore anticipate the claims as written.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ludwig et al (Applied and Environmental Microbiology) disclose 23S rRNA partial sequences for a variety of Pseudomonas species, each of which includes an RNA sequence corresponding to the reverse complement of instant SEQ ID NO: 1 (see entire reference, particularly Figure 2). Hyldig-Nielsen et al disclose PNA

probes targeting the 23S rRNA or rDNA sequences of *Neisseria gonorrhoeae* and *Chlamydia trachomatis* (see entire reference).

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Diana B. Johannsen whose telephone number is 571/272-0744. The examiner can normally be reached on Monday and Thursday, 7:30 am-4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached at 571/272-0735. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Diana B. Johannsen
Primary Examiner
Art Unit 1634